WHAT IS CLAIMED IS:

~~CLAIMS~~

1. A synthetic polypeptide containing one or several defined sequences of PrP or sequences derived therefrom, said sequences being recognized by PrP^{Sc} - binding substances.

2. Synthetic polypeptide as claimed in claim 1, wherein the sequence corresponds to one of the following formulas, containing at least one of the said sequences or a combination of several sequences:

(a) Gly-R_1-Asp-R_2-Glu-Asp-Arg-(Tyr-Tyr)

(b) (Gln)-(Val)-Tyr-Tyr-R_3 -Pro-R_4-Asp-R_5 -Tyr-R_6-(Asn-Gln)

(c) Cys-R_7 -Thr-Gln-Tyr-R_8 -R_9-Glu-Ser-R_{10}-Ala-(R_{11}-Tyr)

(d) (Tyr-Arg)-Glu-Asn-Met-R_{12}-Arg-Tyr-Pro-Asn-(Gln-Val-Tyr)

where R_1= Asn or Ser, R_2 = Trp or Tyr, R_3 = Arg or Lys, R_4 = Met, Val or Ala, R_5 = Gln, Glu or Arg, R_6 = Ser or Asn, R_7 = Val, Thr or Ile, R_8 = Gln or Glu, R_9 = Lys, Arg or Gln, R_{10} = Gln or Glu, R_{11} = Tyr, Ser or Ala and R_{12} = His, Tyr or Asn, and where the amino acids in parentheses are not mandatorily present.

3. Synthetic polypeptide as claimed in claim 1, wherein the sequence corresponds to one of the following formulas, containing at least one of the said sequences or a combination of several sequences:

(e) Gly-Trp-Gly-Gln-Pro-His-Gly-Gly-Gly-Trp-Gly-Gln-Pro-His-Gly

(f) Lys-Pro-R_{14}-Lys-Pro-Lys-Thr-R_{14}-R_{15}-Lys-His-R_{16}-Ala-Gly

(g) Tyr-R_{16}-Leu-Gly-Ser

(h) Ser-Ala-Met-Ser-Arg-Pro-R_{17}-R_{17}-His-Phe-Gly-R_{14}-Asp

(i) Asn-Met-R_{18}-Arg-Tyr-(Pro-R_{14})-(Gln-Val-Tyr-Tyr-R_{19})

where R_{14} = Asn or Ser, R_{15} = Met, Leu or Phe, R_{16}= Met or Val, R_{17} = Ile, Leu or Met, R_{18} = His, Tyr or Asn and R_{19} = Lys or Arg and where the amino acids or sequence zones in parentheses are not mandatorily present.

4. Synthetic polypeptide as claimed in ~~one of claims 1 through 3~~ claim 1, characterized in that the sequence is coupled with a "conformation" sequence, where applicable by means of a conventional spacer sequence, said conformation sequence inducing the formation of a defined conformation of the synthetic polypeptide.

5. Synthetic polypeptide as claimed in ~~one of claims 1 through 4~~ claim 1, characterized in that the "conformation" sequence induces the formation of a β strand.

6. Synthetic polypeptide as claimed in claim 2, ~~3 and 5~~, corresponding to one of the following formulas:

(e) (X)-(Gly)-Ala-Val-Val-Gly-Gly-Leu-Gly-Gly-Tyr-(R_{13})-Z-Tyr-Tyr-R_3 -Pro-R_4-Asp-R_5 -Tyr-R_6 -(Asn-Gln)-(Y)

(f) (X)-Tyr-Tyr-R_3 -Pro-R_4-Asp-R_5 -Tyr-R_6 -(Asn-Gln)-Z-(Gly)-Ala-Val-Val-Gly-Gly-Leu-Gly-Gly-Tyr-(R_{13})-(Y)

where X and Y are arbitrary amino-acid sequences, Z is a conventional spacer such as Gly-Gly, R_3 = Arg or Lys, R_4 = Met, Valor Ala, R_5 = Gln, Glu or Arg, R_6 = Ser or Asn and R_{13} = Met or Val, and where the sequence zones in parentheses need not necessarily be present.

7. Synthetic polypeptide as claimed in ~~one of the above claims~~ claim 1, characterized in that it is present in the retro form at least in one partial sequence.

8. Synthetic polypeptide as claimed in ~~one of the above claims~~ claim 1, characterized in that at least one of the amino acids it contains is present in the D form.

9. Synthetic polypeptide as claimed in ~~one of the above claims~~ claim 1, characterized in that it is present in derivative form.

10. A pharmaceutical preparation for the therapy of prion diseases, characterized in that it contains at least one of the synthetic polypeptides stated in ~~claims 1 through 9~~ claim 1 or at least one PrP^{Sc}-binding substance recognizing the defined sequences, and contains it in a dose adequate for therapy or prevention.

11. Diagnostic means for prion diseases, characterized in that it contains at least one of the synthetic polypeptides stated in ~~claims 1 through 9~~ claim 1 or at least one PrP^{Sc}-binding substance recognizing the defined sequences in a dose sufficient for the particular detection.

12. Diagnostic means for prion diseases, characterized in that it contains at least one of the synthetic polypeptides stated in ~~claims 1 through 9~~ claim 1 or at least one PrP^{Sc}-binding substance recognizing the defined sequences in a dose sufficient for immunization.

13. A pharmaceutical preparation, a diagnostic means or vaccine as claimed in ~~one of claims 1 through 9~~ claim 1, characterized in that the PrP^{Sc} - binding substance it contains is a recombinantly produced rbPrP of the formula of Fig. 4 or in the form of genus-specific deviations thereof.

14. A DNA molecule coding at least one of the synthetic polypeptides of ~~claims 1 through 9~~ claim 1.

15. A kit to detect PrP^{Sc} or antibodies recognizing it, characterized in that it contains at least one synthetic polypeptide as claimed in ~~claims 1 through 9~~ claim 1.

16. A method for preparing PrP^{Sc}-specific antibodies characterized in that non-human mammals are immunized with at least one polypeptide as claimed in ~~claims 1 through 9~~ claim 1 and in that the antibody or antibodies formed as a reaction are conventionally isolated from the mammal following a time interval sufficient for immunization.

17. A method for detecting PrP^{Sc}-specific surface sequence zones, characterized in that a PrP^{C}-specific peptide bank is incubated with PrP^{Sc}-binding substances and in that the binding zones of the peptide bank are made visible using usual visualization techniques and in that the sequence zones are determined therefrom.

18. Application of the polypeptides claimed in ~~claims 1 through 9~~ claim 1 to a pharmaceutical or chemical library to detect PrP^{Sc}-specific active ingredients.